

Hakea aculeata (Proteaceae), a rare and endangered new species from Western Australia

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Abstract

Hakea aculeata sp. nov. is known from one small population on a road verge in the central agricultural region of South-Western Australia. The species is considered in danger of extinction (IUCN category E). It is closely related to *H. ruscifolia* Labill. but the affinities of the two species to the remainder of the genus are not clear.

On 5 October, 1977 I accompanied Dr. G. Benl (Botanisches Staatssammlung, München), Dr. J. H. Willis (formerly of the National Herbarium of Victoria) and Mr. P. G. Wilson (Western Australian Herbarium), to the Cunderdin area about 160 km east of Perth. Our objective was to rediscover if possible *Ptilotus pyramidatus* (Moq.) F. Muell., last collected by W. V. Fitzgerald 70 years ago. The search was unsuccessful, but on the return journey we collected a new species of *Hakea* growing on a narrow road verge south west of Cunderdin (Figure 1). Examination of specimens in the Western Australian Herbarium of *Hakea ruscifolia* Labill. (its closest relative) revealed an earlier collection made near Hines Hill in 1929 by W. E. Blackall. This locality is 80 km east of Cunderdin, and is similarly mostly cleared for agriculture, natural vegetation surviving only on road verges, small portions of farms and a few reserves whose purposes include cemetery, water, and conservation of flora and fauna. The new *Hakea* has not been seen in the Hines Hill area in recent years, though no exhaustive search has been made.

The new population of *Hakea* contains about six plants, which appear to be lignotuberosus and therefore probably able to survive fire. However they are surrounded by a dense assemblage of exotic weeds which might prevent the establishment of seedlings. Seed set was found to be low, many follicles having been attacked by insects and their seed destroyed. If the existing plants were to die the species might then become extinct in the wild. Thus its status according to "The IUCN Plant Red Data Book" (Lucas and Syngé 1978) is *Endangered*.

The new find illustrates how opportunistic discoveries may be made in a region where the flora is incompletely known. It highlights the localised occurrence typical of many Western Australian species and their vulnerability. As the new species is floriferous and colourful (although discouragingly prickly) it would undoubtedly have been collected more often had it been common. It appears likely that this is the sole surviving population of a rare species. Examples of other species known only from road verges are *Acacia depressa* Maslin (1 locality) and *Grevillea scapigera* George (4 localities).

Hakea aculeata A. S. George sp. nov.

Hakea ruscifolia Labill. affinis, a qua foliis majoribus 2-4 cm longis; floribus aureis rubrisque; stylis longioribus 7-8 mm longis; pollinophoro laterale orbiculare; folliculis majoribus 15-18 mm longis, 14-15 mm latis, differt.

Type: SSW of Cunderdin, in 31°45'S, 117°10'E, 5 October, 1977, A. S. George 14960. *Holo:* PERTH; *iso:* CANB, NSW, PERTH.

A shrub to 3 m with lignotuber and with several erect or ascending stems. *Branchlets* numerous, spreading, mostly 1-5 cm long, often themselves branched, giving stems and main branches a dense columnar aspect, densely pubescent with short erect hairs and loosely hirsute with long hairs, the indumentum at length wearing off. *Leaves* scattered but more crowded towards apices of branchlets, lanceolate, oblanceolate or narrowly elliptic, 2-4 cm long, 3-8 mm



Figure 1. *Hakea aculeata* sp. nov. at the type locality near Cunderdin.

wide; apex narrowed into a subulate, pungent, brown mucro; base narrowed into a petiole up to 4 mm long, or the leaves of main branches often sessile; lamina flat to slightly concave, thick, 1-nerved, on both sides pubescent and hirsute becoming scabrous; margins thickened. *Flowers* in short racemes terminal and sessile on branchlets, often several together; in bud enclosed with imbricate, elliptic-ovate, concave scarious bracts 3–5 mm long, densely pubescent outside, glabrous inside, deciduous by anthesis. *Rachis* 1–3 mm long, densely pubescent, bearing 15–22 flowers. *Pedicels* slender, glabrous, 7–13 mm long; torus oblique. *Perianth* yellow, slender, sharply curved adaxially under limb: upper (adaxial) segments \pm 3.5 mm long from base to bend, lower \pm 4.5 mm long; glabrous outside, finely scurfy inside; margins thickened and flange-like inside: limb ovate, obtuse, 0.7–0.8 mm long, glabrous. *Anthers* sessile, 0.5 mm long. *Style* slender, recurved below apex, 7–8 mm long to bend with 3 mm recurved, glabrous, yellow in lower half, red above; pollen presenter lateral, orbicular with a central obtuse umbo, yellow; hypogynous gland 0.4 mm high, extending $\frac{3}{4}$ way around stipe; ovary shortly stipitate, glabrous, red. Follicle \pm ovoid, obtuse, 15–18 mm long, 14–15 mm wide, on a short thick stipe, smooth, pale brown; lips less than 1 mm wide. *Seed* elliptic-orbicular, black, wing continuous, seed body slightly offset, convex and rugose on outer face.

Other collection Near Hines Hill, Sept. 1929, *W. E. Blackall* s.n. (PERTH).

Distribution The species has been collected from only two localities in the central wheatbelt, between 31°32'S and 31°45'S, 117°10'E and 118°01'E.

Habitat At the type locality the plants are growing in sandy loam. Vegetation on the opposite road verge is tall shrubland.

Derivation of the name From the Latin *aculeatus*, aculeate or sharp, in reference to the pungent leaf apices.

Hakea aculeata is closely related to *H. ruscifolia* Labill., having a similar habit, branching system, leaf form, inflorescence, perianth, fruit and indumentum. The dense branching system is characteristic of both species and is similar to that found in many species of *Dryandra*. The terminal inflorescence and the indumentum of spreading hairs are unusual in *Hakea*. *H. aculeata* can be distinguished from *H. ruscifolia* by the generally larger leaves (mostly 1–2.5 cm long in *ruscifolia*); the longer style (6–7 mm long in *ruscifolia*); the lateral pollen presenter (erect or almost so in *ruscifolia*); the larger fruit (7–9 mm wide in *ruscifolia*); and the elliptic seeds (narrow-elliptic with asymmetric wing in *ruscifolia*). Furthermore the new species flowers in September–October whereas *H. ruscifolia* flowers in summer (December to March). In both species the flowers produce a strong, honey-like scent.

In *Hakea*, as in *Grevillea*, the form of the pollen presenter is used together with features of the inflorescence, perianth, leaves and fruit to distinguish sections within the genus. Yet here we have two closely related species, one with the pollen presenter erect, the other lateral. Their affinities in the genus are not clear. Bentham (1870) and Gardner (1930) placed *H. ruscifolia* in Section *Hakea* (as *Euhakea*), though with its almost erect pollen presenter it is probably better placed in *Conogynoides*. On the basis of its lateral pollen presenter, *H. aculeata* belongs to Section *Hakea*. In neither Section, however, are there any species which appear close relatives of these two. It is likely that in a revision of the genus they will be placed in a Section of their own.

References

- BENTHAM, G. (1870). *Flora Australiensis* 5. Reeve, London.
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LUCAS, G. and H. SYNGE (1978). *The IUCN Plant Red Data Book*. IUCN, Switzerland.

Note Added in proof

A further population of *Hakea aculeata* was discovered in August 1979 by B. and M. Smith. The locality is south-east of Cunderdin, within the known range of the species as cited above. It, too, is on a road verge, although better vegetated than the type locality. The population contains 40–50 plants, but the species must still be considered rare and endangered.